3000867
SONY BDA

SONY®

STEREO TURNTABLE SYSTEM

PS-X555ES

OPERATING INSTRUCTIONS Page 2

Before operating the unit, please read this manual thoroughly.
This manual should be retained for future reference.

MODE D'EMPLOI page 16

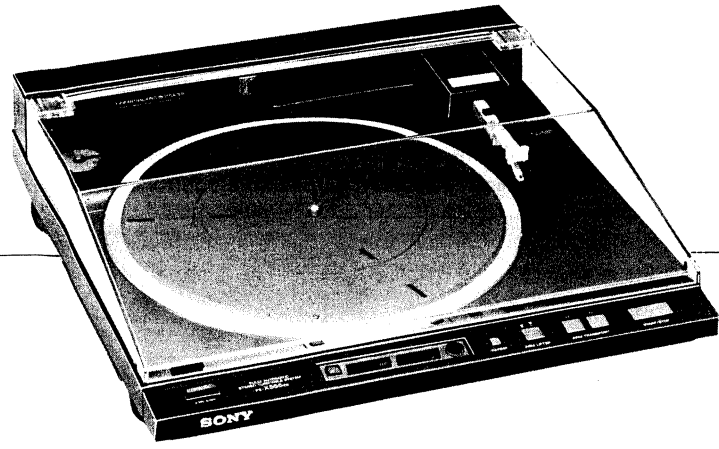
Avant la mise en service de l'appareil, lire attentivement ce mode d'emploi.
Conserver ce manuel pour toute référence ultérieure.

BEDIENUNGSANLEITUNG Seite 30

Vor Inbetriebnahme lesen Sie bitte diese Bedienungsanleitung aufmerksam durch.
Bewahren Sie diese Anleitung zum späteren Nachschlagen gut auf.

MANUAL DE INSTRUCCIONES Página 44

Antes de utilizar el aparato, lea este manual detenidamente, y consérvelo para futuras referencias.



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English

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

TABLE OF CONTENTS

Features 2
Operating voltage 3
Precautions 3
Location and function of controls 4
Turntable assembly 5
  Cartridge installation
Tonearm adjustment 6
  Tonearm balance adjustment
  Stylus force adjustment
Connections 7
Record playing 8
  Preparation
  Auto play
  To begin record play at a particular point—Manual play
  To move to a different part of a record while the record is playing
  To lift up the stylus during play
  To stop during play
  To repeat play
How the auto-record-size selection works 10
Tips on record handing 10
Synchronized play of the turntable and a cassette deck 11
Instantaneous start of play (cueing) 12
Tonearm drop-point adjustment 12
Replacing the stylus 12
Changing the cartridge 13
Maintenance 13
Specifications 14
Trouble checks 15

FEATURES

Linear tracking tonearm
A linear tracking tonearm is designed to duplicate the movement of the head which cuts the record master.
Compared with a pivoted tonearm, a linear tracking arm has a very small tracking error (which means greatly reduced harmonic distortion) and almost no pressure on the inside wall of the groove (which means improved tracking ability and channel separation).

Biotracer electronic tonearm
The horizontal and vertical movement of the tonearm is monitored by the Biotracer's own sensors, and this information is transmitted to the tonearm by the tonearm's own linear motors to suppress resonance at low frequencies and to obtain the maximum signal-to-noise ratio. With the microcomputer incorporated, the tonearm movement, up/down or forward/backward, is accurate and smooth.

Front panel operation with the dust cover closed
The ARM TRANSPORT buttons allow you to move the tonearm easily over the desired point of the record with the dust cover closed. Start/stop of the record play and tonearm up/down can also be controlled using the buttons on the front panel.

Electronic stylus force adjustment
As the stylus force is adjusted by the control on the front panel and digitally read out, it can be easily adjusted even during record play.

Automatic record size selection
The record size is automatically set by a photo sensor system. If no record is on the turntable, the tonearm will not descend but will automatically return to the arm rest.

Muting system
A muting system activates when the tonearm is lifted and is deactivated after the tonearm lowers onto a record so there is no need to turn the amplifier volume down every time a stylus is placed on a record.

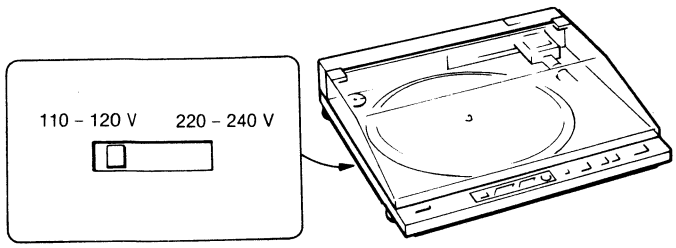
Quartz lock and magnedisc servo system
The turntable maintains an accurate and drift-free speed by referring to a frequency generated by a very stable quartz oscillator, and with aid of a speed monitoring system which utilizes a magnetic pick-up head and a pulse signal derived from a magnetic coating at the edge of the platter.

Linear torque BSL motor
Direct drive system with Sony's unique BSL (brushless and slotless) motor which has an extremely low noise level and whose smoothness virtually eliminates wow and flutter. Its high torque assures a quick start to 33 1/3 rpm after only a half revolution.

Synchronized operation with the Sony cassette decks
When the tonearm lowers onto the lead-in groove of a record, the cassette deck stand-by mode is released and the record mode assumed. When play finishes, the cassette deck is automatically set first in the record muting mode, then in the pause mode. This synchronized operation is possible with Sony cassette decks equipped with a four-pin remote control jack which is connected with the Sony RM-65 synchro remote control unit.

OPERATING VOLTAGE

Before connecting the unit to the power source, check that the operating voltage of your unit is the same as the local power line voltage.
The continental European model (Type 1) operates on 220 V ac.
The model for other countries (Type 2) operates on either 110 - 120 or 220 - 240 V ac. The voltage selector is located on the bottom. If the selector must be reset, **disconnect the ac power cord** and slide the selector to the appropriate voltage.



PRECAUTIONS

On safety

- Before operating the unit, be sure that the operating voltage of your unit is identical with that of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- The unit is not disconnected from the ac power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.

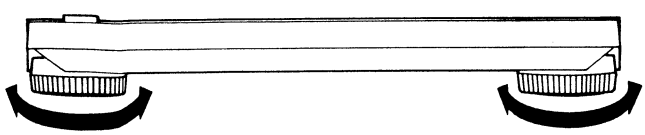
On installation

- Place the turntable on a level surface.
- Avoid placing the unit near electrical appliances (such as a television, hair dryer, or fluorescent lamp) which may cause hum or noise.
- Place the turntable where it will not be subject to any vibration, such as from speakers, slamming of doors, etc.
- Keep the unit away from direct sunlight, extremes of temperature, and excessive dust and moisture.
- The turntable has resilient feet that isolate the mechanism from external shock and vibration. If the unit has not been placed on a level surface, turn the feet to level the unit.

Level check

Place the stylus over the record, pressing the ◁ button, then lower the stylus onto the record with the ▼/▼ button. When you raise the stylus by pressing the ▼/▼ button again, check the stylus tip movement as follows.

- If the stylus tip does not rise straight up but veers to the right, adjust the right feet high.
- If the stylus tip does not rise straight up but veers to the left, adjust the left feet high.

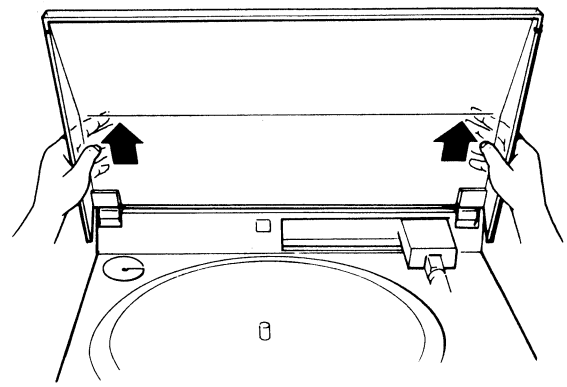


On operation

- Do not move the tonearm with hands, since this may damage the electronic linear tracking tonearm.

On dust cover removal

Open the dust cover fully and slide it upward with both hands.

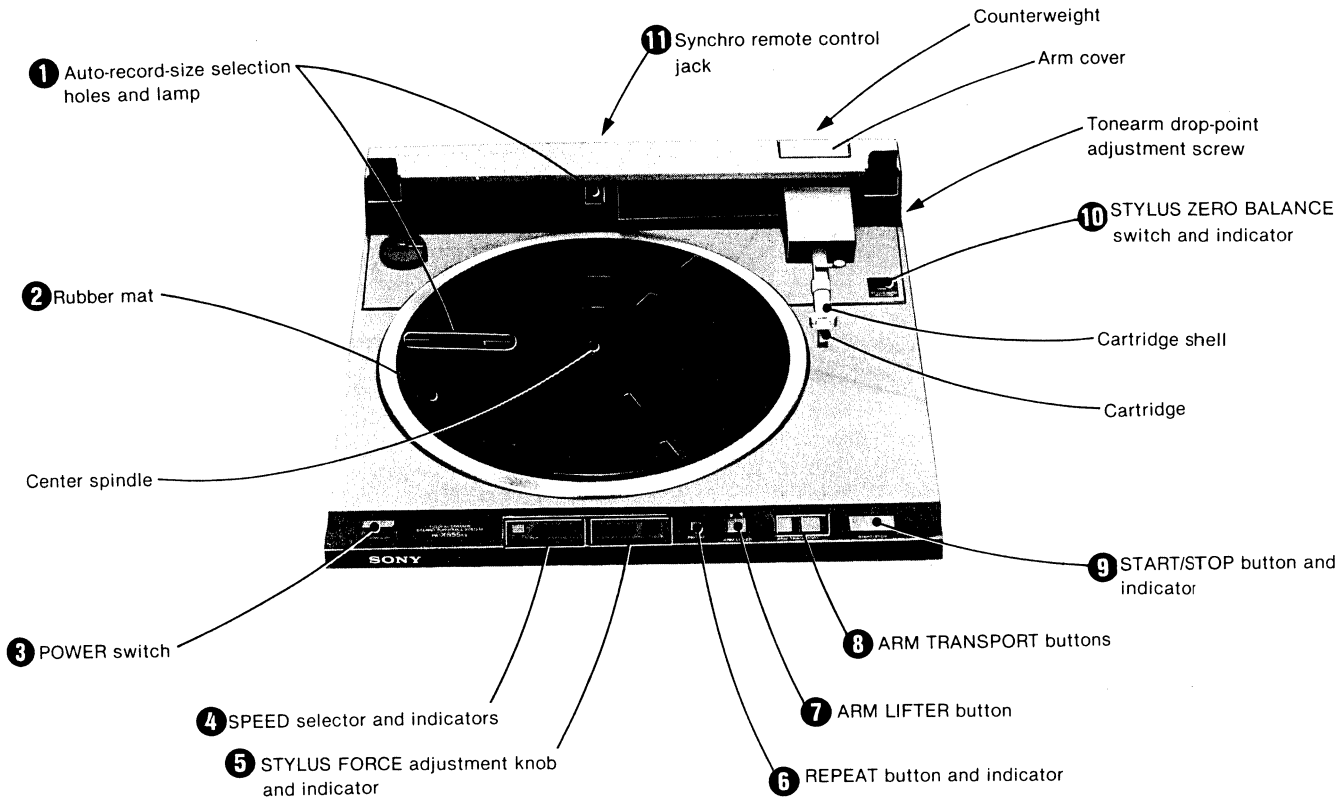


On repacking

Do not throw away the carton and packing materials. It is an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton box.
Before repacking, secure the tonearm to the arm rest and fix the transit screws in the original positions.

LOCATION AND FUNCTION OF CONTROLS

The photo below shows the assembled turntable.



❶ Auto-record-size selection holes and lamp
Record size is automatically selected by a beam transmitted from a lamp through the holes on the rubber mat and the platter to the photo detectors underneath the platter. When no record is on the platter, the tonearm will not lower onto the turntable.

❷ Rubber mat
Place the rubber mat so that the holes for auto-record-size selection on the rubber mat and on the platter are matched correctly.

❸ POWER switch
Press to turn on the turntable. To turn the turntable off, press it again.

❹ SPEED selector and indicators
Selects the record speed. When the POWER switch is turned on, the speed is always 33⅓ rpm and the indicator on the right illuminates. When the selector is pressed, 45 rpm is selected and the indicator on the left illuminates.

❺ STYLUS FORCE adjustment knob and indicator
Turn this knob to set the appropriate stylus force for the cartridge you use. The stylus force can be changed during record play if so desired. The stylus force is indicated in 0.1 gram steps.

❻ REPEAT button and indicator
Press this button to repeat play. The indicator illuminates and repeat play continues until this button is pressed to stop it. If the START/STOP button is pressed during repeat play, the tonearm returns to the arm rest and the turntable stops rotating.

❼ ARM LIFTER button
This button lifts and lowers the tonearm.
When the tonearm is on the arm rest, it cannot be lifted up with this button.

❽ ARM TRANSPORT buttons
To move the tonearm inwards, press the ◁ button. To move it outwards, press the ▷ button. The tonearm is raised automatically and continues to move while the button is depressed. The tonearm will stop when the button is released. For fine adjustment of the tonearm drop-point over a record, press and immediately release the appropriate button. This button is useful for beginning a record partway through, or for skipping to another selection.

❾ START/STOP button and indicator
Press this button to start the record playing, and the indicator illuminates. To stop during play, press it again.

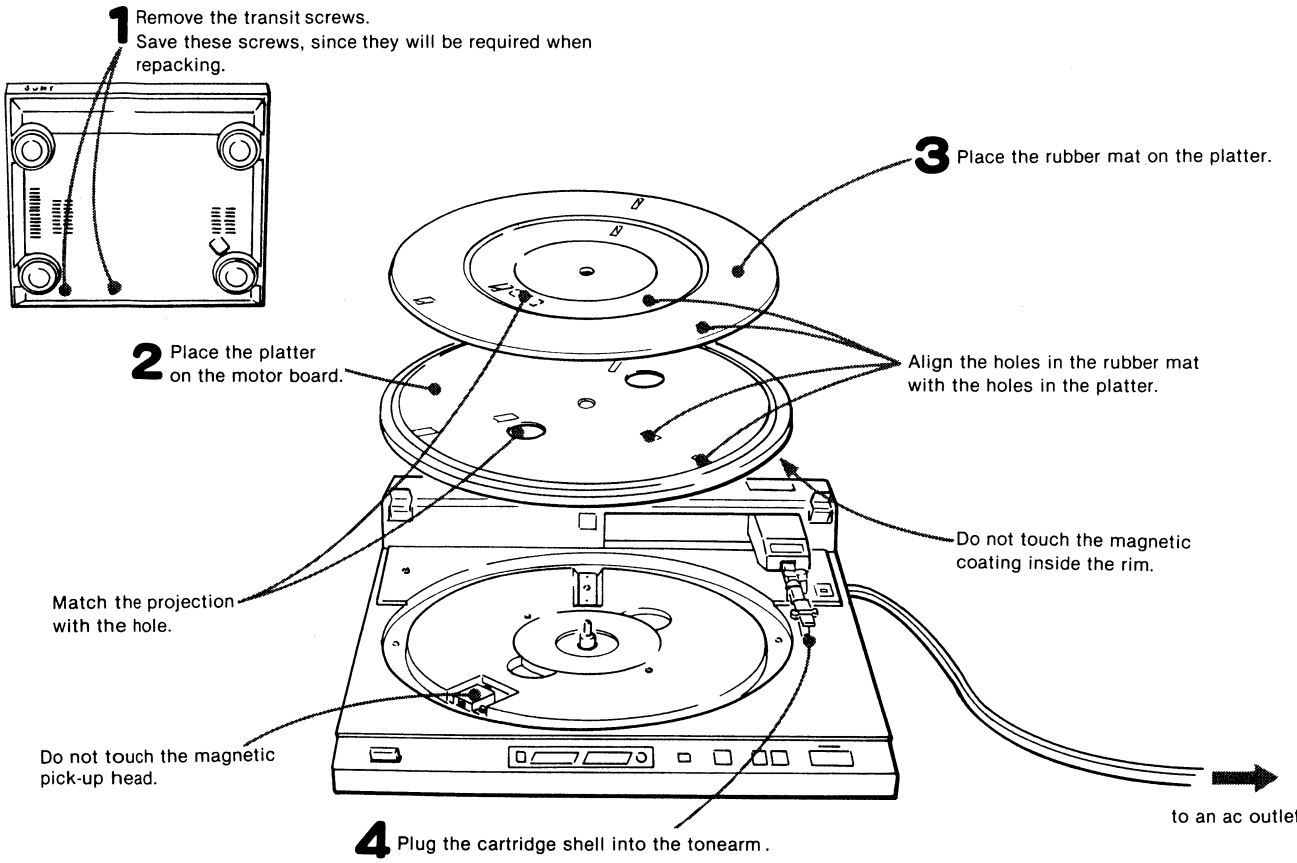
❿ STYLUS ZERO BALANCE switch and indicator
Press this switch before adjusting the tonearm balance.

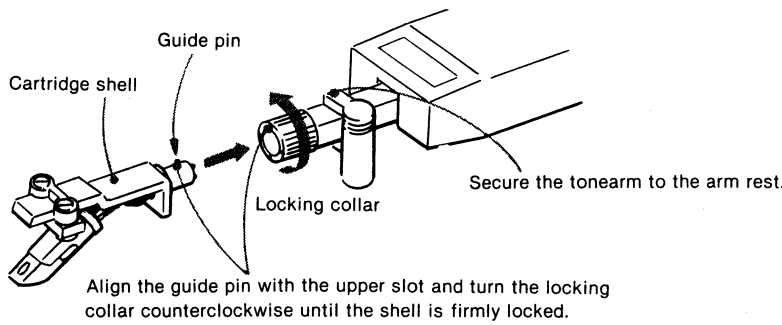
⓫ Synchro remote control jack (rear)
Synchronized recording from disc to tape is possible on specified Sony cassette decks by using the optional RM-55 synchro remote control unit.

TURNTABLE ASSEMBLY

Remove all packing material and wipe off the cabinet.
Save the packing box and materials for possible future use.

Follow the numbered sequence.


1 Remove the transit screws. Save these screws, since they will be required when repacking.
3 Place the rubber mat on the platter.
2 Place the platter on the motor board.
Align the holes in the rubber mat with the holes in the platter.
Do not touch the magnetic coating inside the rim.
Match the projection with the hole.
Do not touch the magnetic pick-up head.
to an ac outlet
4 Plug the cartridge shell into the tonearm.


Guide pin
Cartridge shell
Secure the tonearm to the arm rest.
Locking collar
Align the guide pin with the upper slot and turn the locking collar counterclockwise until the shell is firmly locked.

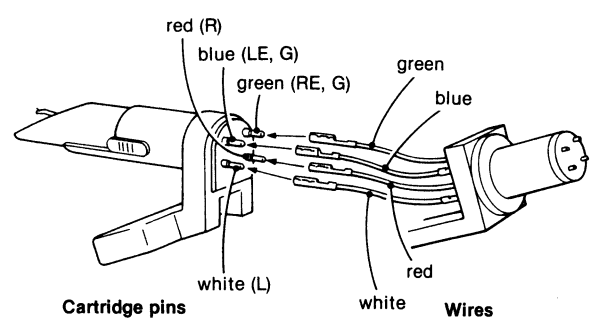
CARTRIDGE INSTALLATION

For Type 1 model: Any cartridge weighing from 2.8 to 7.8 grams can be mounted on the supplied cartridge shell. Heavier cartridges from 7.3 to 12.3 grams can be mounted when the supplied extra weight is used.

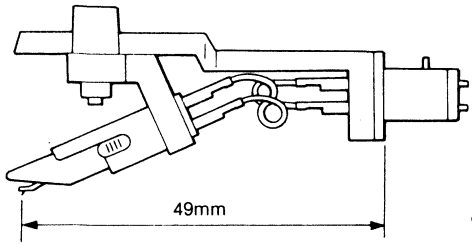
For Type 2 model: The supplied cartridge has been installed on the cartridge shell at the factory. The following procedure is not necessary unless you replace the cartridge.

1 Connect the lead wires of the shell to the corresponding pins on the new cartridge.

Wires	Cartridge pins
White	White, L (Left channel signal)
Blue	Blue, LE or G (Left channel ground)
Red	Red, R (Right channel signal)
Green	Green, RE or G (Right channel ground)

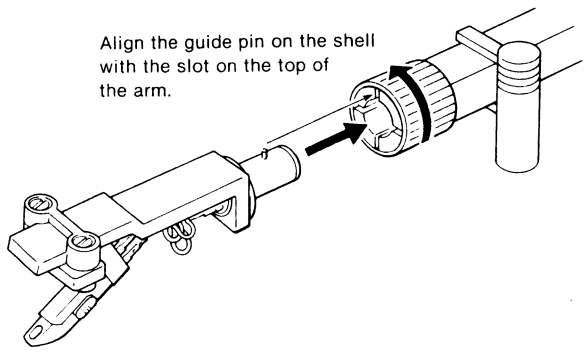


2 Install the cartridge into the shell with the mounting screws as illustrated.



Place the cartridge shell exactly over the diagram and adjust the position of the cartridge.
Tighten the screws down. (Be sure that the cartridge is not inclined to the right or left.)

3 Plug the shell into the tonearm and turn the locking collar counterclockwise until the shell is firmly locked.



TONEARM ADJUSTMENT

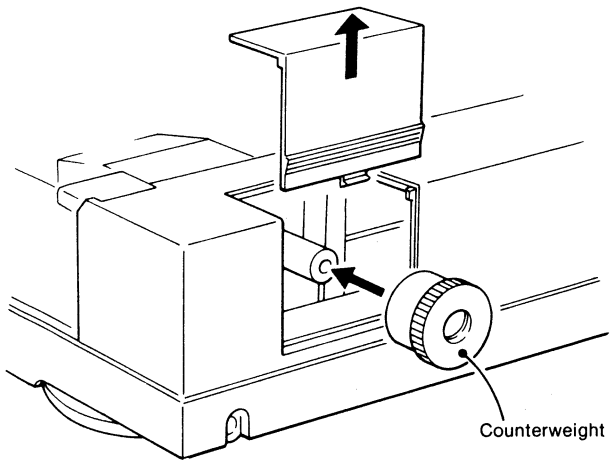
The turntable must be on a level surface while the tonearm is being adjusted.
Be careful not to damage the stylus tip while making adjustments.

Before starting to make this adjustment, be sure to turn on the power, since the tonearm is electronically controlled.

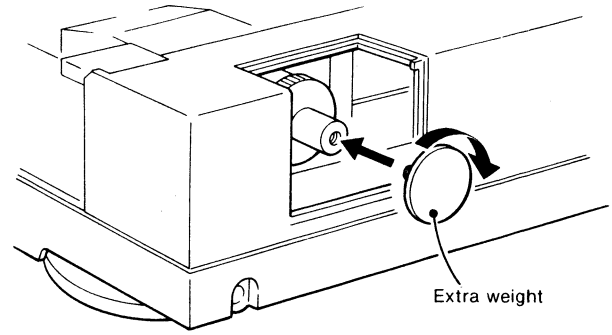
TONEARM BALANCE ADJUSTMENT

It is critically important for good sound reproduction that the stylus traces the record groove accurately and with the proper tracking force. To do this, the tonearm must first be balanced so that the proper tracking force can be applied.
To balance the tonearm, proceed as follows :

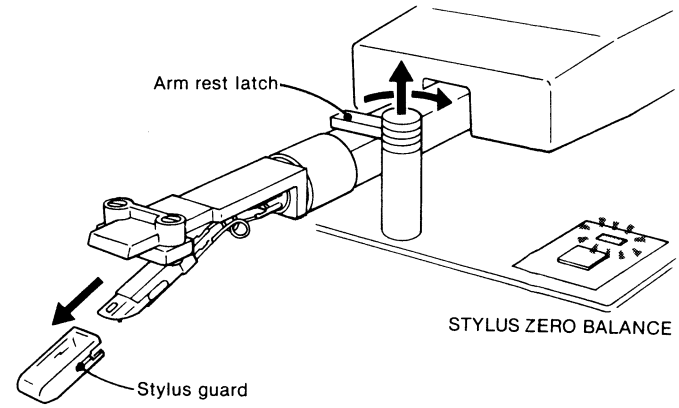
1 Remove the arm cover and insert the counterweight.



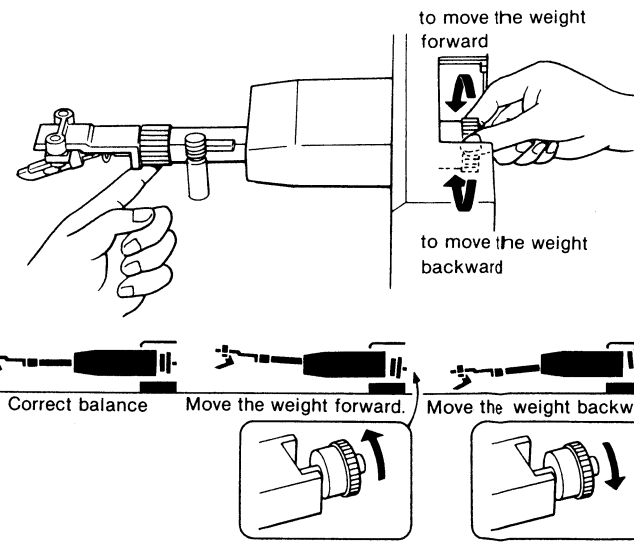
2 If it is necessary, attach the supplied extra weight to the end by turning it clockwise.



3 Press the STYLUS ZERO BALANCE switch. The built-in indicator will light up.
4 Unlock the arm test latch and remove the stylus guard.



5 Adjust the position of the counterweight by tuning it. Release the tonearm gently and check the balance. Repeat this step until the arm is balanced.


to move the weight forward
to move the weight backward
Correct balance
Move the weight forward.
Move the weight backward.

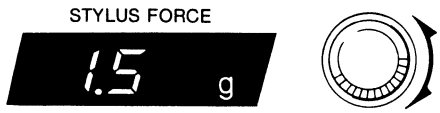
6 After the tonearm is balanced, replace the stylus guard and arm cover, and secure the tonearm to the arm rest.
7 Press the STYLUS ZERO BALANCE switch again. The built-in indicator will go off.

Notes on the STYLUS ZERO BALANCE switch

- The STYLUS ZERO BALANCE switch operates only when the tonearm is between the arm rest and the tonearm's drop-point for a 30 cm record. Beyond this area, the STYLUS ZERO BALANCE indicator does not light up even if the switch is pressed.
- When the zero balance is not correctly set, the tonearm does not move even if any control button is pressed. In this case, the STYLUS ZERO BALANCE indicator will flash to show an incorrect setting.

STYLUS FORCE ADJUSTMENT *

Turn the STYLUS FORCE adjustment knob so that the indicator displays the appropriate stylus force for the cartridge. Adjustment range is from 0.5 to 2.5 g.

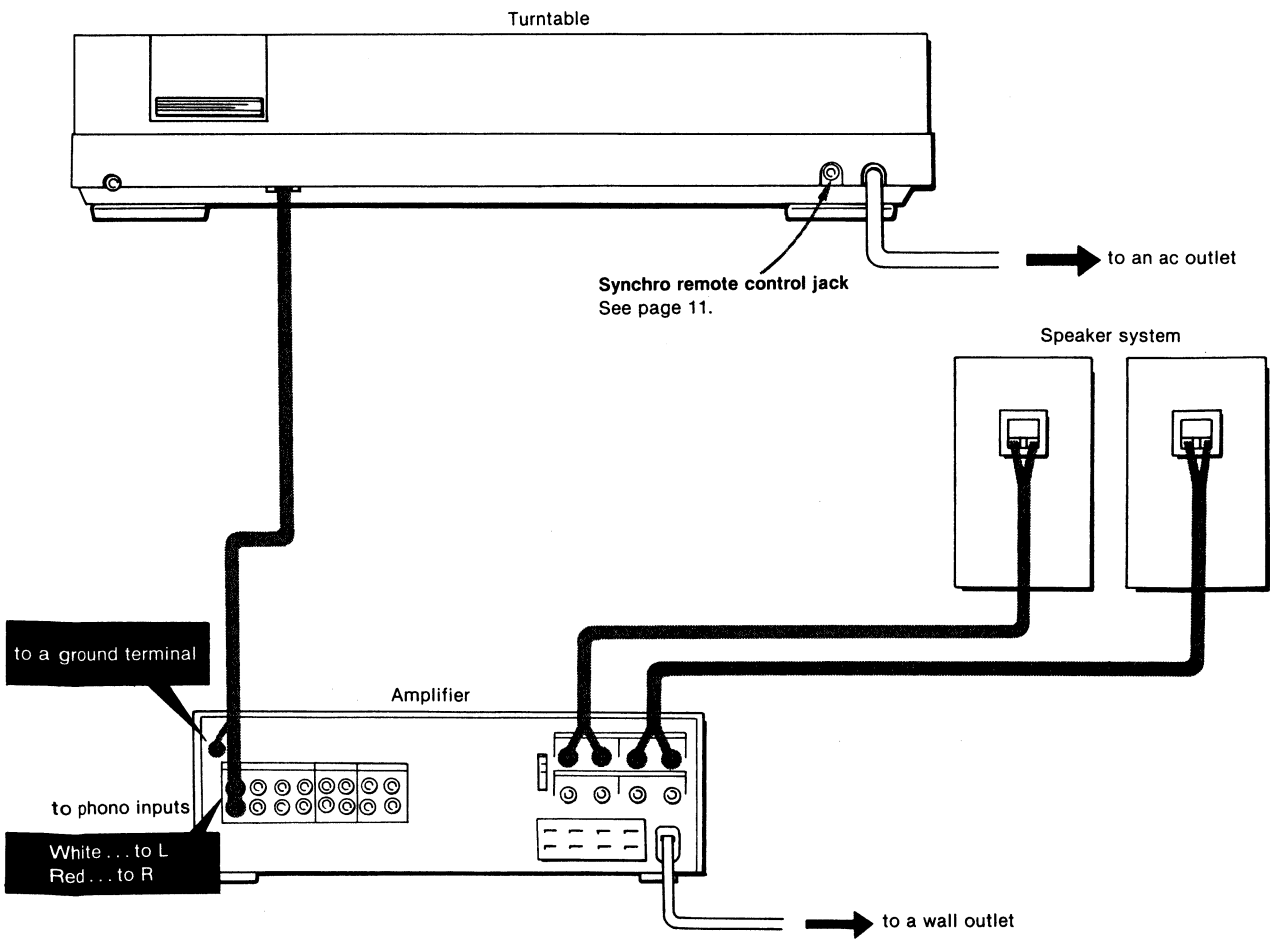


***Stylus force**

Stylus force is the vertical force applied to the stylus tip so that it can accurately trace a record groove.
The stylus force is applied after the tonearm is balanced.
Since the proper stylus force differs depending on which cartridge is installed, be sure to apply the stylus force recommended for your cartridge. If the stylus force is too light, the stylus will skip grooves. When it is too heavy, the stylus tip and the record will wear excessively. Note that if you play a record at a temperature below 10°C (50°F), or if the record to be played is badly warped, the stylus force should be increased by 20%.

CONNECTIONS

- Turn off the amplifier before making connections.
- Be sure to insert the cable connectors firmly into the jacks. Loose connections may cause hum and noise.
- Connect the red plug of the connecting cord to the right-channel jack [R] of the amplifier and the white plug to the left-channel jack [L]. Otherwise, the right and left channels will be reversed.
- Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.

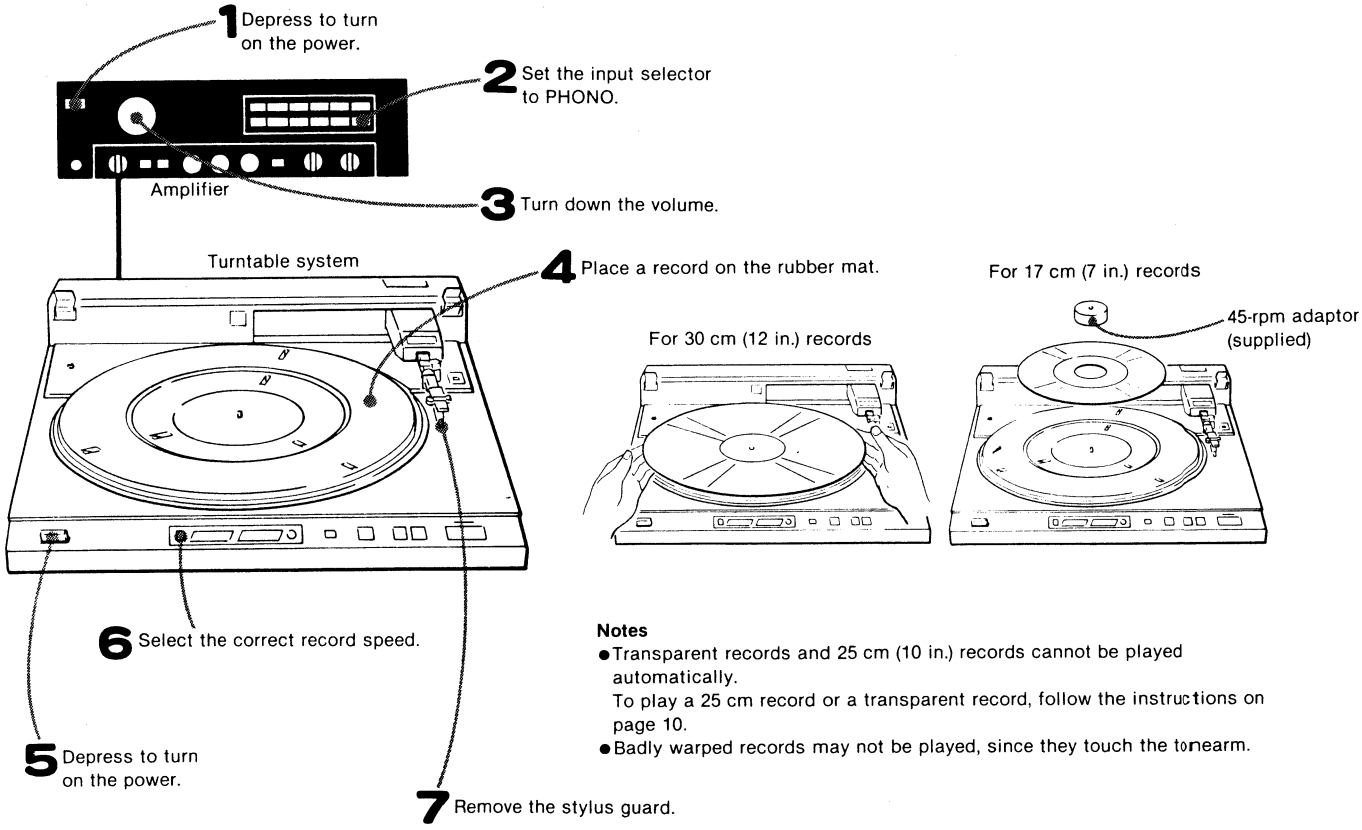


RECORD PLAYING

PREPARATION

●When the POWER switch is turned on, the record speed will always be 33⅓ rpm unless the SPEED selector is pressed to select 45 rpm.

●When using the XL-333E cartridge (supplied with Type 2 model), be sure to set the CARTRIDGE selector of the amplifier to MC (moving-coil type).

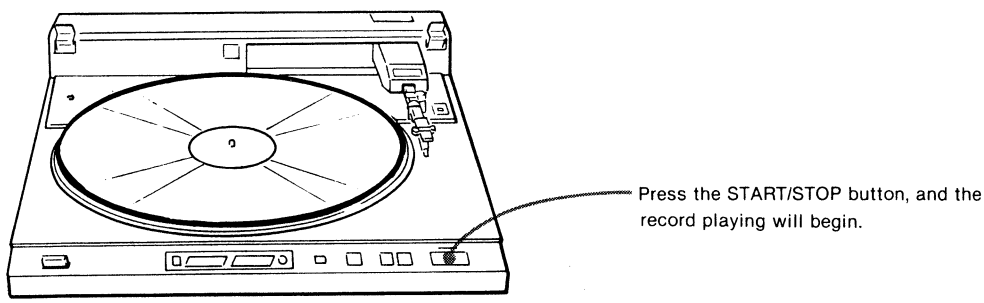

1 Depress to turn on the power.
2 Set the input selector to PHONO.
Amplifier
3 Turn down the volume.
Turntable system
4 Place a record on the rubber mat.
For 17 cm (7 in.) records
45-rpm adaptor (supplied)
For 30 cm (12 in.) records
6 Select the correct record speed.
5 Depress to turn on the power.
7 Remove the stylus guard.

Notes

●Transparent records and 25 cm (10 in.) records cannot be played automatically.
To play a 25 cm record or a transparent record, follow the instructions on page 10.

●Badly warped records may not be played, since they touch the tonearm.

AUTO PLAY

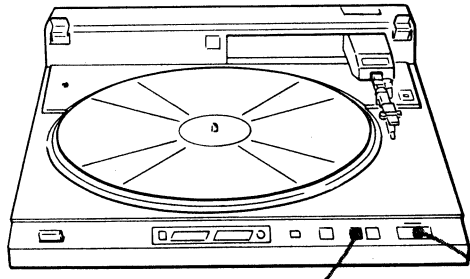


When the tonearm reaches the end of the record, the turntable will stop and the tonearm will automatically return to the arm rest.

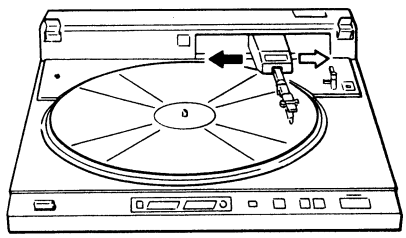
Note

Turn off the POWER switch after the tonearm returns to the arm rest. If the POWER switch is turned off while playing or while the tonearm is returning to the arm rest, the tonearm will be lifted up and stop at that point, and will continue returning to the arm rest when the POWER switch is turned on the next time. While the tonearm is returning, the START/STOP button does not activate the record playing.

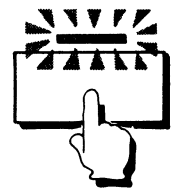
TO BEGIN RECORD PLAY AT A PARTICULAR POINT—Manual play



1 Move the tonearm over the desired point of the record, pressing the ◁ button. For fine adjustments, press and immediately release the ◁ button or the ▷ button.



2 Press the START/STOP button.



The turntable starts rotating, the stylus lowers onto the record and playback starts.

When the tonearm reaches the end of the record, the turntable will stop and the tonearm will automatically return to the arm rest.

TO MOVE TO A DIFFERENT PART OF A RECORD WHILE THE RECORD IS PLAYING

Keep the appropriate ARM TRANSPORT button pressed until the tonearm reaches the desired position. For fine movement, press and immediately release the appropriate button. To lower the tonearm onto the record, press the ARM LIFTER button.

TO LIFT UP THE STYLUS DURING PLAY

To lift the stylus from a record for a moment and then start playing from the same point, press the ARM LIFTER button. To lower the tonearm onto the record, press the button again.

TO STOP DURING PLAY

Press the START/STOP button. The turntable will stop rotating and the tonearm will return to the arm rest.

TO REPEAT PLAY

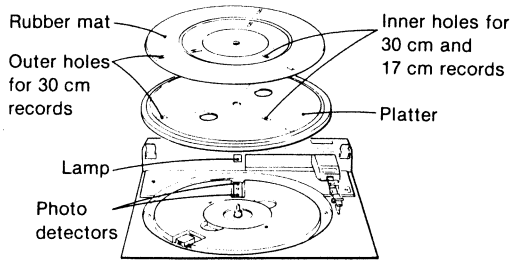
Press the REPEAT button either before or after starting play. The tonearm continues repeat play unless the button is pressed again to turn off the repeat function. To stop during repeat play, press the START/STOP button.

Note

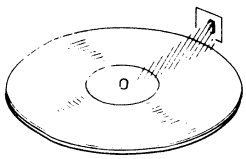
Transparent records and 25 cm (10 in.) records cannot be played repeatedly.

HOW THE AUTO-RECORD-SIZE SELECTION WORKS

When the START/STOP button is pressed, the tonearm goes automatically into the lead-in groove, whether the record is 30 cm or 17 cm. A beam from the lamp is transmitted through the holes on the rubber mat and the platter to the photo detectors which activate the auto-record-size selection.

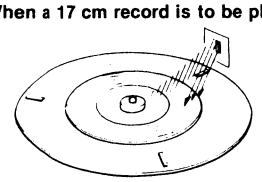


When a 30 cm record is to be played,



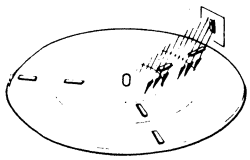
both inner and outer holes are covered so no beam is transmitted to the photo detectors.

When a 17 cm record is to be played,



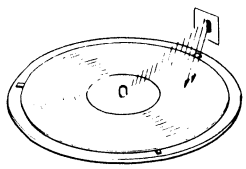
the inner holes are covered so a beam is transmitted through the outer holes to the photo detector.

When there is no record on the platter,



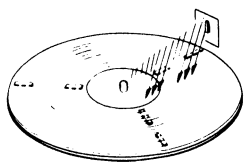
a beam is transmitted through both the inner and outer holes to the photo detectors. Even if the START/STOP button is accidentally pressed, the tonearm does not lower.

When a 25 cm record is to be played,



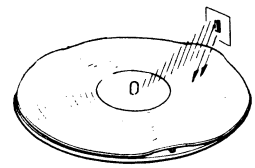
the tonearm lowers to the same point that it would if a 17 cm record were on the platter, since the inner holes are covered. To play a 25 cm record, move the tonearm over the lead-in groove with the ARM TRANSPORT buttons, press the ARM LIFTER button to lower the stylus and press the START/STOP button.
In this case, auto-return will not activate at the end of the record. Press the START/STOP button to return the tonearm to the arm rest.

When a transparent record is to be played,



a beam passes through both the inner and outer holes to the detectors so the tonearm does not lower onto the record. To play a transparent record, move the tonearm over the lead-in groove with the ARM TRANSPORT buttons, press the ARM LIFTER button to lower the stylus and press the START/STOP button.
In this case, auto-return will not activate at the end of the record. Press the START/STOP button to return the tonearm to the arm rest.

When a badly warped record is to be played,



a beam may pass through the holes to the detector(s) and cause a malfunction of the auto-record-size selection.

TIPS ON RECORD HANDLING

- Before playing, clean the record with a record cleaner or soft cloth. If a spray cleaner is used, make sure that it has dried completely before playing the record. Playing the record before the cleaner has dried may damage the record.
It is a good idea to clean the record again before putting it away.
- Handle a record by its edges and do not touch the grooves.
Fingerprints on the record surface may encourage an accumulation of dust, resulting in impaired tone.
- Use a commercially available anti-static spray to neutralize the static electricity on a record.
- Avoid exposing a record to direct sunlight or sources of heat, such as a hot-air duct.
- Store your records vertically. They should not be compressed.

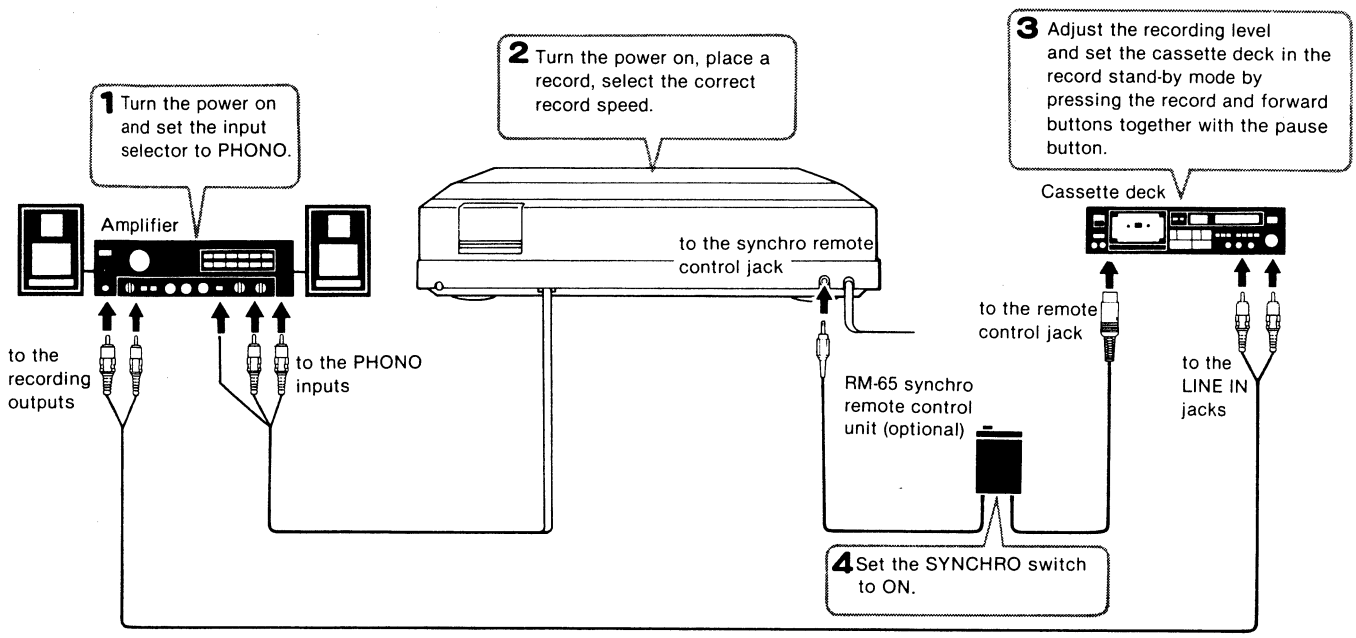
SYNCHRONIZED PLAY OF THE TURNTABLE AND A CASSETTE DECK

——with an RM-65 synchro remote control unit connected

Record recording starts only when the START/STOP or ARM LIFTER button is pressed. When the tonearm lowers onto the record, the cassette deck goes into the record mode and, when the tonearm is lifted up, the deck goes into the auto record muting mode for four seconds, then into the pause mode.

Cassette decks which can be used with your turntable for this special synchronized operation are those Sony models which are equipped with a 4-pin remote control jack.
An RM-65 synchro remote control unit (optional) is required to connect the turntable and the cassette deck.

CONNECTION AND PREPARATION


1 Turn the power on and set the input selector to PHONO.
2 Turn the power on, place a record, select the correct record speed.
3 Adjust the recording level and set the cassette deck in the record stand-by mode by pressing the record and forward buttons together with the pause button.
Amplifier
Cassette deck
to the synchro remote control jack
to the remote control jack
to the recording outputs
to the PHONO inputs
RM-65 synchro remote control unit (optional)
to the LINE IN jacks
4 Set the SYNCHRO switch to ON.

RECORDING

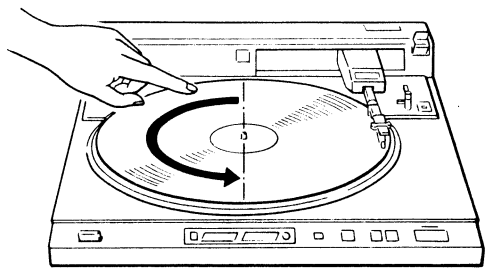
Desired action	Turntable operation	Synchronized operation of the cassette deck
To record from the beginning of a record...	Press the START/STOP button.	When the tonearm lowers onto the record, the pause mode is released and recording begins.
To lift up the tonearm to move to a different point on a record...	Press the ARM LIFTER or ARM TRANSPORT buttons.	When the tonearm is lifted up , auto record muting activates for four seconds, then the pause mode is assumed.
To record from a point some way in the record...	Move the tonearm to the desired point and press the ARM LIFTER button.	When the tonearm lowers onto the record, the pause mode is released and recording begins.
To stop recording during record play...	Press the START/STOP button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
When record play ends...	The tonearm returns automatically to the arm rest.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.

Note: Be sure to set the SYNCHRO switch of the RM-65 to OFF when you do not want to use the synchronized play function.

INSTANTANEOUS START OF PLAY (CUEING)

Owing to the powerful starting torque of the turntable, instantaneous start on a record is possible. For this operation the amplifier volume should be set to a normal listening level.

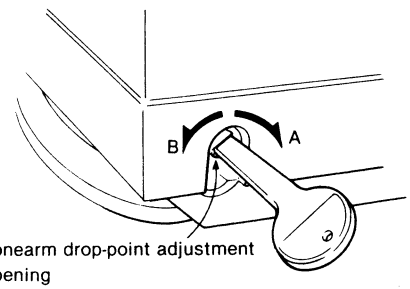
1 Press the POWER switch (ON) and select the correct record speed.
2 Lower the tonearm at the lead-in groove of the desired music by pressing the ARM LIFTER button.
3 Rotate the turntable **slowly** by hand and at the starting groove of the music, it begins to be heard. Reset the stylus at the point just before the starting of the music by rotating the turntable by hand in the opposite direction a little. The starting point is now found.
4 From the point indicated in the illustration below, rotate the turntable by hand slowly in the opposite direction up to the center position. (The rotation corresponds to the turntable starting torque.)
5 Press the START/STOP button. The music starts to play instantaneously.



TONEARM DROP-POINT ADJUSTMENT

The tonearm's drop-point during auto play has been adjusted at the factory. If this needs to be readjusted, proceed as follows.

1 Be sure that the turntable is turned off and the tonearm is secured to the arm rest.
2 Insert the supplied adjustment key into the drop-point adjustment opening on the rear panel.
To move the drop-point inward...turn the screw in direction A.
To move the drop-point outward...turn the screw in direction B.
Be sure not to turn the screw in direction B so far that the stylus tip cannot make contact with the record.



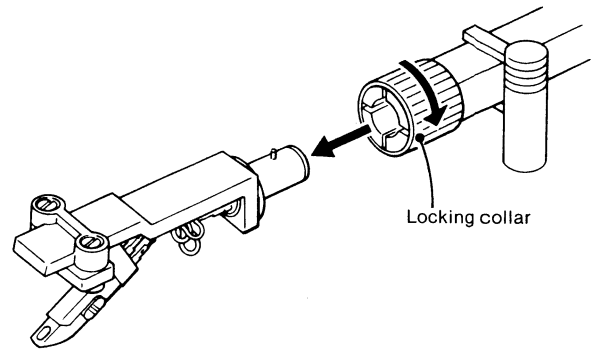
3 Start auto play and check that the stylus lowers at the correct drop-point.
If the drop-point is correct for 30 cm (12 inch) records, it will also be correct for 17 cm (7 inch) records.

● You can keep the adjustment key in your key holder if you like. It may come in handy for a variety of jobs.

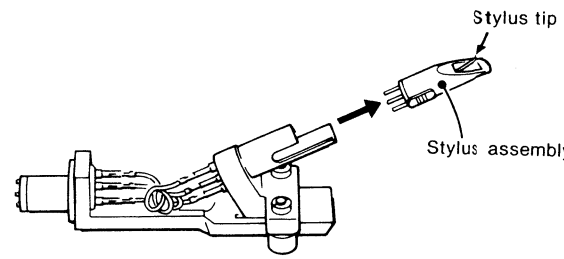
REPLACING THE STYLUS

The stylus will lose its effectiveness and begin to damage records after about 400 hours of use.
For the XL-333E cartridge (supplied only with Type 2 model), an ND-333E replacement stylus is available at your Sony dealer.
Handle the stylus carefully as it is very delicate.
Install the replacement stylus as follows.

1 Lower the sound level or turn the amplifier off.
2 Secure the tonearm to the arm rest and separate the cartridge shell from the tonearm by turning the locking collar in the direction of the arrow.



3 Detach the stylus assembly by grasping it between the thumb and forefinger and pulling gently in the direction of the arrow.

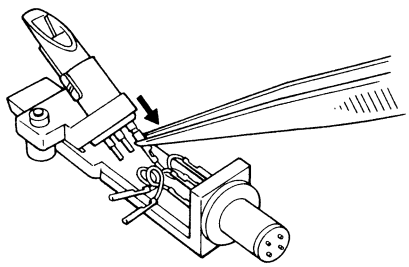


4 Insert the new stylus into the cartridge.
5 Plug the shell into the tonearm and turn the locking collar counterclockwise until the shell is locked.

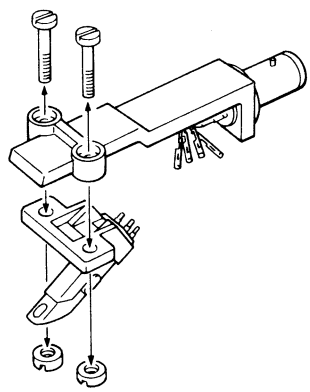
CHANGING THE CARTRIDGE

Cartridges weighing from 2.8 to 7.8 grams can be mounted on the supplied cartridge shell (7.2 grams).
Heavier cartridges from 7.3 to 12.3 grams can be mounted when the supplied extra weight is used.

1 Lower the amplifier volume or turn off the power.
2 Secure the tonearm to the arm rest, then remove the shell from the tonearm by turning the locking collar.
3 Disconnect the lead wires of the shell from the four output terminals of the cartridge.



4 Remove the old cartridge by loosening the two mounting screws.



5 Install a new cartridge shell as described in "CARTRIDGE INSTALLATION" on page 5.

MAINTENANCE

Stylus
Before playing a record, clean the stylus with a soft brush. Brush the stylus from back to front. Never attempt to clean the stylus with your finger tip. If a fluid stylus cleaner is used, make sure not to moisten the stylus too much.

Cabinet
Clean the cabinet and dust cover periodically with a soft dry cloth. If the stains are difficult to remove, use a cloth moistened with a mild detergent solution. Do not use solvents such as alcohol, benzine ro thinner, since they will damage the finish.

Rubber mat
When the rubber mat becomes dirty, wipe it gently with a soft cloth slightly dampened with water.

Lubrication
The turntable requires no periodic lubrication. The motor shaft is lubricated at the factory for the life of the turntable.

SPECIFICATIONS

Turntable

Platter	32 cm (12⅝ in.), aluminum-alloy diecast
Motor	Linear torque BSL (brushless and slotless) motor
Drive system	Direct drive
Control system	Quartz lock control, magnedisc servo control system
Speed	33⅓ rpm, 45 rpm
Starting characteristics	Comes to nominal speed within a ½ revolution (33⅓ rpm)
Wow and flutter	0.015% (WRMS)*, 0.02% (WRMS) ±0.03% (DIN)
Signal-to-noise ratio	78 dB (DIN-B)
Load characteristics	0% up to 100 g stylus force (at lead-in groove of a record)
Speed deviation	Within ±0.0003%
Automatic system	Lead-in, return, reject, repeat, arm up/down, record size selection

Tonearm

Type	Electronic linear tracking tonearm
Pivot-to-stylus length	130 mm (5⅛ in.)
Overall arm length	212.5 mm (8⅜ in.)
Tracking error	±0.07°
Stylus force adjustment range	0.5 - 2.5 g
Cartridge shell weight	7.2 g
Cartridge weight range (including cartridge shell)	10 - 15 g 14.5 - 19.5 g (with extra weight)

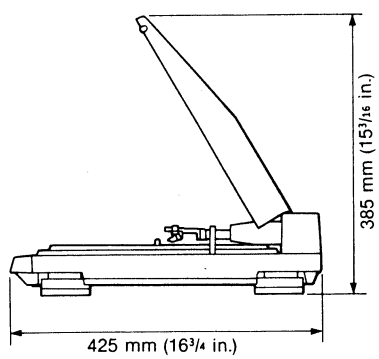
Cartridge XL-333E (supplied only with Type 2 model)

Type	Moving coil type
Frequency response	10 Hz to 35 kHz
Channel separation	20 dB at 1 kHz
Output voltage	0.165 mV at 1 kHz, 5 cm/sec., 45°
Load impedance	40 ohms to 100 kilohms
Stylus force	1.2 to 1.8 g (1.5 g recommended)
Stylus	Sony ND-333E
Weight	3.5 g

General

Power requirements	Type 1: 220 V ac Type 2: 110 - 120 or 220 - 240 V ac adjustable 50/60 Hz
Power consumption	23 W
Dimensions	Approx. 430 × 105 × 425 mm (w/h/d) (17 × 4⅛ × 16¾ in.) including projecting parts and controls
Weight	Approx. 7.4 kg (16 lbs 5 oz), net Approx. 9 kg (19 lbs 14 oz), in shipping carton
Supplied accessories	SH-156 head shell (1) (Supplied only for Type 1) Counterweight (1) Extra weight (1) 45-rpm adaptor (1) Tonearm drop-point adjustment key (1) Cartridge XL-333E (Supplied only for Type 2)

With the dust cover opened



While the information given is correct at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

Note

Appliance conforms with EEC Directive 76/889 regarding interference suppression.

* This new measuring method concerns only the turntable assembly, including the platter. It excludes wow and flutter caused by the tonearm, the cartridge, or the record. Measured by obtaining signal from magnetic pick-up head.

TROUBLE CHECKS

The following trouble checks will help you correct most common problems encountered with a turntable system. Should any problem persist after you have made these checks, consult your nearest Sony service facility.
Before proceeding with these trouble checks, first refer to the connections and the operating procedures.

TROUBLES	CAUSES	WHAT TO DO
The tonearm does not move by pressing the START/STOP button.	Incorrect tonearm balance.	Adjust the tonearm, referring to page 6.
The tonearm does not lower onto the record.	Transparent or warped record	See page 10.
The tonearm always lowers on the point for 30 cm records.	A rubber mat other than the one supplied being used.	Use the supplied rubber mat.
	Incorrect placement of the supplied rubber mat	Align the holes in the rubber mat with the holes of the platter.
Impaired tone quality	Improper stylus force	Adjust the stylus force, referring to page 7.
	Dusty stylus	Clean the stylus with a soft brush from back to front.
	Worn stylus	The stylus life is approx. 400 hours. Replace with a new stylus.
Auto return does not operate at the end of play.	A record with shallow return grooves being played by a cartridge with low stylus force	Apply more stylus force.
No audio from one channel	Loose connection of phono cord	Connect the cord firmly.
	Dirty terminals of the cartridge shell	Clean the terminals with a soft dry cloth.
	Loose attachment of the cartridge shell to the tonearm	Fix the cartridge shell to the tonearm firmly.
Steady low-pitched humming sound	Loose attachment of the cartridge shell to the tonearm	Fix the cartridge shell to the tonearm firmly.
	Ground wire is not connected to the amplifier	Connect the ground wire to the amplifier.
Groove skipping; tonearm skating; tonearm not advancing	Improper stylus force	Apply proper stylus force. (See page 7.)
	Turntable not level	Place the turntable on a level surface.
	Defective record	
Loud rumble or low-frequency howl*	The turntable is subjected to external vibration.	Place the turntable on a solid surface free from external vibration.
	The turntable is placed too near the speaker.	Locate the turntable as far away from the speaker as possible.
The turntable causes interference to the radio or television reception.	The turntable is placed too near the receiver.	Turn the turntable off or locate the turntable as far away from the receiver as possible.

* This is called "acoustic feedback" and is caused when vibrations from the speakers are transmitted through the air or via solid objects (such as the shelves, the cabinet, the floor, etc.) to the turntable, where they are picked up by the stylus, amplified and reproduced through the speakers once again.